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burlap, etc. Norfolk is the ocean terminus of the Tidewater railroad, which crosses the State from east to west. Its construction is for the purpose of marketing the coal from one of West Virginia's richest fields. The grading in the Virginia portion is nearing completion, and the contracts demand that the road be ready for traffic by January 1908. It will probably be the heaviest coal carrier in the State, and will increase the coastwise and foreign traffic out of Norfolk at least 25 per cent.

It is generally believed that the Tidewater will finally be extended to the intersection with the Wabash railroad, and be consolidated with that system, in which event it would become one of the most important trunk lines.

ECONOMIC GEOGRAPHY AND ITS RELATION TO ECONOMIC THEORY AND HIGHER EDUCATION.

BY

J. RUSSELL SMITH.

Five years ago Stanley Hall, adopting a figure from European politics, called Geography the sick man of the curriculum. The charge is well founded, for it certainly has lagged behind other important subjects in being rationalized and receiving due recognition of its importance. In this latter respect it has not yet come into its inheritance. It has but lately emerged from the period in which its study consisted in the deadly exercises of memorizing in a blind way lists of cities, rivers, capes, and boundaries, and the acquisition of unexplained facts concerning the distribution of various classes of things.

The theory of evolution has paved the way for modern geography, which has had to await the development, spread, and general acceptance of the revolutionizing truths commonly associated with the name of Darwin. Organisms have been found to be capable of influence by their surroundings. Life is progressive because the organism responds to its environment and the environment changes. Here is a vast field for study. This environment, and its component elements, the resulting organic responses, constitute the field in which geography has worked. The field has by no means been covered, but in some directions the publications of geographers indicate that they have reached or passed its boundaries.

In both America and Europe considerable attention has been given to each of the two great divisions of the field—the earth, as shown by the study of physiography, and life, as shown by the work done in biography and anthropogeography. But the curricula of higher institutions of learning show that Europe is far ahead of us in the appreciation of geography, broadly considered. Certainly the European university student exceeds the American in his interest in courses dealing with such subjects as "snow, ice and glaciers," "oceanography" and biogeography, the last dealing alternately with the zones of distribution of plants and animals and giving equal emphasis to the Kerguelen cabbage, the Antarctic penguin, the Atlantic protozoa, and the peculiar way in which certain species of plants are distributed among the European valleys through which they have migrated from various avenues of entrance. These and many other phases of geographical study have all the commanding interest that arouses the enthusiasm of a devotee, and holds him as the astronomer, the philologist, or the mathematician is held, but for the great mass of humanity the geography that is to be of interest will have primarily the human interest, and a value more directly detectable than that resulting from the study of the distribution of certain varieties of toads.

Anthropogeography—the geography of man—is a wide field, and if taken up systematically it might be necessary to give, theoretically at least, as large a part of the field to the savage as to the civilized man. Indeed, we possibly find a greater variety of conditions of life among the savage than among the civilized peoples. But Economic Geography partakes of the definition of Economics, and it comprises those geographic influences that affect the economic status of man. This shifts the emphasis from the savage to the civilized, because the latter has, in the greater complexities of his economic status, the results of the same geographic influences as the savage, and also ten or twenty times more geographic influences than has his primitive brother. The emphasis is still further placed upon civilized rather than savage man, because we, the students, are continually thinking of the lands of the savage in the terms of the civilization which will probably soon come to them. We have small interest in the savage or his mode of life except to make him a matter of record and then civilize or replace him. Economic geography, therefore, neglects the savage, and devotes itself to the study of the physical environment of civilization.

We have received from nineteenth-century biology the sweeping truth that organisms are what their environment has made them. We believe this to be true in the case of monkeys, fish, and forest trees, but just how much it means for man, for races, and for civilization we have only begun to realize. If it be true that details of our physical make-up, our personal qualities, racial qualities, our industries, and, through them, our social and political conditions and institutions, are all profoundly shaped by our physical environment, it would appear to be one of the plainest of things that all processes of education should give great attention to the study of the economic environment in all its phases. We are not yet doing so, but there is rapid progress in that direction.

This is evidenced by the quick succession of new text-books of geography and by the changing concept of the philosophy of history. The attitude toward history is important, for that which is essential to the understanding of the past is also necessary to the understanding of the present. It is not long since the ordinary history was little more than a chronicle of military events, of edicts and great legislative acts, of accessions, elections, and dates. There was little explanation of the forces of which the chronicled acts were but symptoms, if perchance they were under any circumstances more worthy of general attention than is an account of a murder in the pages of our daily papers. Within a short period we have seen history explained in a variety of terms. Some have shown that it depended almost entirely upon the amount of religious freedom and resulting freedom of thought; others that it depended upon forms of government and the resulting personal freedom. Other explanations have also been given, and the past third of a century has witnessed a growing recognition of the fact that the physical environment, the economic environment, or the economic geography of the region occupied by the people in question, and even that of other regions, has been one of the most profound influences in the making of history. The Fourth of July orator will not be so universally believed in the future as in the past when he shows that nearly everything that is desirable in the universe is due to the amazing collection of *qualities* possessed by the American people. What about the land possessed by this people? This calls to mind a question put by a student of philosophy at one of the fortnightly meetings held by the fifty odd American students in Leipzig a few years ago. Some economic topic was being presented, and when the discussion was opened to the group, the man above mentioned asked, "Is it not true that the resources of the United States have had a great deal to do with the greatness of the country?" That a mature student, a graduate of an American college, should have asked that question in good faith—and he did—is a condemnation of our educational system. Even a philologist should know something about the country in which he lives as a place in which to live. For giving this acquaintance with our country there is in our schools no general provision above the geography of the grammar grades. The colleges have no geographic requirements for entrance, and, therefore, the private preparatory schools of high-school grade usually let the subject entirely alone. The public high schools often have in the first year a course in physical geography; and of late some of these schools, particularly those claiming the special character of commercial schools, have added a course in commercial geography. More should be done. We should know our country as it is and as it probably will be, as well as its history, which aims to tell what it was.

Economic geography is the description and interpretation of lands in terms of their usefulness to humanity. Its net result is the understanding of the relationship between the people of a district and their physical environment, just as the manager of a great steel company understands the relation of a blast furnace to the rest of his organization, or as a physician understands the relation of the lungs or stomach to the general health of the human body. This involves a large amount of concrete economic information. Anything affecting the economic status through the environment, or the environment through the people, has a place. The field is wider than that taken by the writers of commercial geographies. The personal equipment for the economic geographer is the ability to detect and understand factors that produce an economic effect and to discern an approximate measure of that effect. When we consider the dependence of social sciences, of industry, and of human welfare upon the proper understanding of the land in which we live, it seems surprising that this study has not already reached greater prominence in our educational systems. This surprise is all the greater because of the pedagogical advantages offered by a study of economic geography. Students are put to study foreign languages and geometry for the resulting mental discipline. Yet economic geography dips continuously into the natural sciences, and is an unending series of causes and effects whose comprehension involves the best kind of mental discipline and horizon-broadening along with the acquisition of knowledge of prime usefulness.

For the graduate student, also, it has advantages. It would be difficult to find better practice in sifting and using material than the student gets in making a study of economic geography of a selected region. To begin with, much of the material is in widely-scattered and obscure sources. Much that appears to be material is not; and this fact must be detected by sane judgment, the application of known principles, and comparison of authorities. The economic geographer has much chaff, but some wheat, to find in the writings of men whose prime interests are diverse—rhetoric, politics, strategy, big game, local pride, or an attempt to interest the general public and make a book that will sell. If to any of these be added the fact that the writer may be almost entirely devoid of any economic instinct, the result may at times be almost ludicrous. As an example of this is a recent handbook of the Argentine Republic. It purported to be a description of that country from the industrial standpoint; yet in a country which, like Texas, has moisture conditions varying from tangled swamps to cactus deserts there was no mention made of any inadequacy of the water supply for purposes of agriculture. Yet there is in that country an area twice as large as Germany too arid for the farmer. The student working in such fragmentary, contradictory, and inadequate material has opportunity to speedily lose undue reverence for print and the teacher has opportunity to aid the student in learning to separate truth from trash.

Any science must in its presentation have some basis for systematic arrangement. A course of lectures by a German geographer of note, dealing with snow, ice, and glaciers, gave equal emphasis to the snows of the top of Aconcagua, of Grinnell Land, of the high Alps, and of the plains of Saxony. This was done because snow was interesting because it was snow. It was being studied for its own sake. Economic geography deals with those phenomena having influence upon the economic status of man and the consequent economic responses. If snow claimed a place here it would be through its influence upon winter wheat and other vegetation, upon water supply and floods, upon lumbering in the northern forests, upon transportation by sledge, upon the housing or pasturing of cattle by winter, etc. The snows of Aconcagua and the high Alps would be passed by unless it were shown that they became of use to man, as by slow melting they might release water for power and for irrigation, and thus become the industrial lifeblood of human communities in the valleys below.

A satisfactory understanding of the economic conditions of any region involves a wide understanding of human activity of an industrial character and the ability to recognize resources. Industry is a result of geographic conditions—a kind of geographic index. Resource and industry go hand in hand; yet it is necessary to be able to appreciate them separately. A resource is something which may under possible conditions be made into a utility. The first thing the economic geographer desires to know about any region, even an uninhabited isle, is, what are its resources? Second, what are the means under which the resources can be converted into utilities? Third, what is the likelihood of the changes coming to pass?

We can only recognize resources by knowing how and under what conditions industry may use them. The progress of invention is constantly giving new processes, which produce new industrial possibilities and make resources where before there was, in an economic sense, but a desert waste. The application of the basic process to American steel-making enabled us to use the phosphatic ores of Michigan and converted the barren shores of Lake Superior into the world's greatest ore region. The discovery of some similar process for reducing titanic ores may shift the industry to the province of Ontario, if reports of titanic ore deposits there are well founded. The application of American agricultural methods to rice-growing may make this country the greatest rice exporter. The economic results coming from the use of a successful cotton-picking machine are difficult to anticipate. The cotton gin is apparently the economic key to the political history of the United States from 1820-1870.

In this connection the bearing of technical possibility is often much overstated, and lands are spoken of as having possibilities which could only be realized by the introduction of devices and practices which mature thought will show us must be foreign to the people of the land in question for decades to come.

Another phase of any estimate of resources and the industries that may arise from them is the influence of industries elsewhere. Alaska has—so it is claimed—agricultural possibilities quite as good as Finland, an agricultural country with several million inhabitants; but Alaska will not be utilized to any large extent while the American people have cheap, unused land in the United States. We have on our Atlantic and Gulf shores much more swamp and marsh land than Holland has reclaimed; and it will be more productive because of our warmer climate. But this resource, like Alaska, will remain idle so long as good land in Virginia and the South continues to have its present almost nominal value.

A knowledge of resource and of industry must be reinforced by some knowledge of the industrial qualities and equipment of peoples. They vary greatly. How do they vary and how has it come about? Why is it that the eloquent, intelligent, and lordly Indian could not be made to work either by Spanish master or English conqueror, and has as a consequence retreated before the white man's advance like the wild animals of the forest, while the less lordly and, probably, less intelligent negro labours, bears burdens, and survives in our midst? I shall not discuss here the probable origin of the work quality in races, but it is probable that this trait of the white and yellow man comes as slowly as civilization itself; and being essential to any economic advance, it is practically the basis of and coincident with civilization. Yet, entirely overlooking this quality, millions of Americans enthusiastically voted for a policy of extending to another race, the Filipinos, the blessings of American liberty and civilization, and they expected these blessings to be fitted on in a few years, like styles in clothing upon the person, or sewers, trolleys, and telephones upon their towns. The American voter is beginning to realize that the Filipino changes slowly and the economist and economic geographer must consider well the qualities of peoples as well as the qualities of land and climate and the possibilities from technical improvements. This human factor was rather harshly recognized by an eminent American engineer, who, in reference to a comparison of the number of the population in one of our Western States with that of one of the independent nations of the world, said, "But how many of those people does it take to make one American?"

In gauging the usefulness of lands there is always a very considerable amount of knowledge that can be quickly inferred by one possessed of a knowledge of some of the factors in economic geography. Geographic and climatic types are often world-wide in their application. If we recognize the type we instantly know a number of resulting conditions. There is a certain amount of uniformity about flood-plains and deltas, plateaux, and mountains. Certain soils bar certain products. Rainfall, by the mere statement of its amount, may half describe a country. Below a slightly varying minimum there can be no general tilling of the soil and no forest, only pasture. Beyond sixty inches per year the successful growing of Temperate-Zone grain is difficult, because of too much rain; but both grass and forest grow with great profusion. The seasonal distribution of rainfall is, by its mere mention, as descriptive as its amount. A region with a winter maximum and a dry summer like southern California and Italy differs profoundly in its economic activities from a region of abundant summer rain like Louisiana and South China. A single statement may sometimes be as descriptive as a chapter. A student was recently reporting on the resources of a certain district and in the same paragraph mentioned good agricultural lands and salt as furnished by a lake. A salt lake implies an inland drainage basin, which implies excess of evaporation over rainfall, and a resulting aridity which rarely, if ever, permits agriculture without irrigation. A proper appreciation of the significance of the salt lake would have shown the student that his statement about agriculture could not be founded in fact if his salt statement were correct.

A knowledge of the concepts and facts involved in economic geography is essential to a satisfactory grasp of many questions in Political and Social Science. The progress of law is in part but a record of attempts at solving problems growing out of geographic and industrial situations. A good example of this is the recent discovery of our lack of any suitable irrigation law, and the many perplexing situations that have resulted from the rapid attempts to adapt agriculture and then law to geographical conditions strange to our race. The political scientist—and we need one—who will enlighten us upon irrigation law must be as familiar with agricultural processes in our trans-Missouri region as is the orange-grower of California or the alfalfa-grower of Colorado, and he needs a much wider knowledge of the economic geography of the region.

Political economy, or economics, deals much with psychology and abstract thought, but also with the material world, and therein it also depends largely upon a background of economic geography. A recent successful text-book on Economics says it is a "study of men earning a living" or "the study of the material world," etc. "The science of wealth" is a brief definition that was much used in my college days. A very successful recent book states that economics "considers all of the circumstances which affect the production and distribution," etc., of wealth, and the book then unfolds a two and one-half page description of the United States of America, and nineteen paragraphs are devoted to a sketch of the development of our industries. All of the above-mentioned difficulties involve the idea that the student should begin the study of economics with a knowledge of the world in which we live and make our living—that he should have some mastery of the contents of economic geography as indicated in this paper. The present science of economics may give students an appreciation of the economic aspects of many human devices, practices, and institutions, but it largely takes for granted, and leaves untaught, the ability to appreciate the remaining part of the field—namely, the economic aspects of the environment in which we live and think. As yet this important preparation is, with the exception of grammar-school geography, commonly left to the chance information picked up by a student whose powers of observation in this field have rarely been trained. Without the preparation of economic geography, the courses in economics are, to a considerable extent, shafts without pedestals, and much of the good result may be missed because the student lacks the concrete economic facts with which to clothe the skeletons of theory. I submit, therefore, to the economists that they would do well to see that their students are equipped with the concrete information coming from economic geography before taking up the more abstract social sciences.

Economic geography is also of use to the publicist and the citizen. If Joseph Chamberlain, of Birmingham, had known South Africa as Theodore Roosevelt knows the West, the Boer war would have been different, if by some wonder it had come to pass at all. If a few men at Washington in 1898 and '99 had known more about the economic geography of the Philippines, that chapter in our history would probably have been brighter. If one-half of the thousand leading men in the South from 1850-60 had been familiar with the economic geography of the Northern states, the majority would probably have sided with Robert E. Lee and been opposed to secession and war. Our acquisition of Louisiana and Oregon was due to the foresight of Jefferson and Whitney—geographers who appreciated the value of these unused lands, and succeeded in adding them to this country practically without cost to the nation, but at considerable cost to themselves. In a thousand ways the questions that must be settled by those who decide the foreign and domestic policy of nations and the policy of states and cities are at root questions of, or questions involving, economic geography.

This study is also of great personal and practical use to the citizen, and on that ground alone is deserving of a higher place in education. This continent is still essentially undeveloped. Industries are being established and rapidly readjusted. Emigration is still common. Men of all callings are constantly seeking new homes. How shall they be guided in this quest but by a knowledge of the resources and industries, but above all by the industrial possibilities, of the region to which they go? If a capable young lawyer or physician locates in a Western town that grows into a city, his success is almost assured. If he locates in a town without a future, he shares the fate of the town. Thousands of examples of this have occurred, and sometimes on a large scale. A casually-mentioned disaster almost or quite rivalling the destruction of San Francisco occurred between 1888 and 1896 between the 100th and 105th meridian and between Canada and Indian Territory. It occurred gradually, and its losses and victims fell one by one, and there was no national outcry, but the disaster was none the less great. Thousands upon thousands of American families, seeking to build up farm homes and ignorant of the economic geography of the region into which they were moving, went beyond the rainfall bounds of agriculture and settled on land that was too arid to support industry of that kind. As is the case in such transition lands, good years come with the bad; but the bad predominated, until, pushed by threatening starvation, the settlers emigrated after years of toil, much poorer than they came. It is said that a quarter of a million people were thus forced out of western Kansas alone. There is scarcely an adult in the investing class in the Eastern states who does not know persons who lost by this Kansas hegira through having loaned money to aid in the development of the Kansas prairie. As the Mississippi valley farm line had gone westward, the farm mortgages had for years been good investments; and in the absence of accurate geographical knowledge or of its dissemination, the Eastern investor knew no reason why farms should stop at 100° west until the lesson was taught by the loss of millions.

On these same prairies, some hundreds of miles north, James J. Hill, an economic geographer of high rank, saw the possibility of homes, and he threw railways across the bleak, bare plain in spite of the cries of folly. The success of the venture has made him a multimillionaire.

Investment everywhere follows, if wisely done, the teachings of economic geography. Where shall a great plant be located? Many factors are involved in that question. An example will illustrate. The Lackawanna Steel Company with a plant at Scranton found the plant in need of remodelling and enlarging. It was also found that Scranton, in the high-priced anthracite coal field, was no longer a good place for a great plant. A careful survey was made of the ore, coal, coke, water-power, limestone, transport, and labour questions in the United States, and of the market. As a result of this piece of applied geography, the mighty machines of the new Lackawanna plant now thunder beside the lake at South Buffalo; and it is declared that Pittsburg is outdone by 63 cents per ton on iron cost.

We have entered upon the period when investments must often be made in distant parts of the country, and we have also begun to seek foreign investments. Herein lies the explanation of the recent statement by a prominent New York financier, that economic geography is one of the most important things in the preparation of the banker for his career.

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